

Rewiring Australia's Energy Future



IMPOSTER!



Today's discussion

Clean
Energy
Nillumbik
(just a little)

**Rewiring
Australia**

EELS



Clean Energy Nillumbik





Clean Energy Nillumbik

- Volunteers in the communities of Nillumbik
- Vision: A world where energy is renewable and life-enhancing for all communities and all species
- Purpose: Urgently transition Nillumbik to become a renewably powered community



Clean Energy Nillumbik

- Events and information
 - Sustainable House Day
 - Expert Eco Chats
 - Clean Energy and EV Expos
 - festivals/markets
- How to help local households and businesses

About Rewiring Australia

- ⚡ Non-profit research & advocacy organisation dedicated to representing the people, households and communities in the energy transition.
- ⚡ **On a mission to electrify everything.** That is, to replace all fossil fuel-based machines with efficient, electric ones powered by renewable energy.



Co-Founder: Dr Saul Griffith

- Engineer, scientist, energy expert, visionary
- Rewiring America/Rewiring Australia founder
- Books The Big Switch etc
- Co-designed America's Inflation Reduction Act



From **start up** to **impact**

2021

Rewiring Australia
launched

2023

\$1.7b in Federal
Budget allocated
to household
electrification

2024

Launched
universal access to
finance proposal
for electric home
upgrades

2025 +

Win national
policy ...national
local groups
network



A research and advocacy organisation dedicated to electrifying everything.



**Electrify
Everything**
FOR EVERYONE

COMMUNITY ACTION



dailyadvertiser.com.au

Monday December 04, 2023 THE DAILY ADVERTISER

NEWS

Wellham reckons Wagga could well electrify everything

Dan Holmes

FROM where Ed Wellham is sitting, net zero looks pretty good.

His home is powered by a 25 kilowatt solar array, generating free power whenever the sun shines.

It also helps heat his large swimming pool for about 80 per cent less than gas.

Mr Wellham said it took a lot of planning to power his home by renewables. But now, he wants to help the



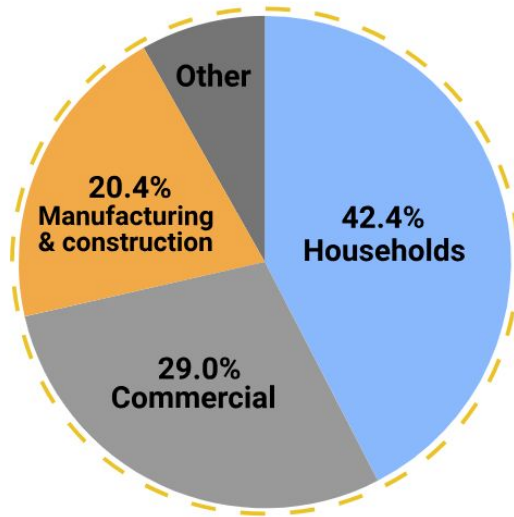
money, and the planet. I'm on that journey too."

Now, Electricity Wagga will partner with Australia's biggest renewable energy advocate, Rewiring Australia, to help get the message out.

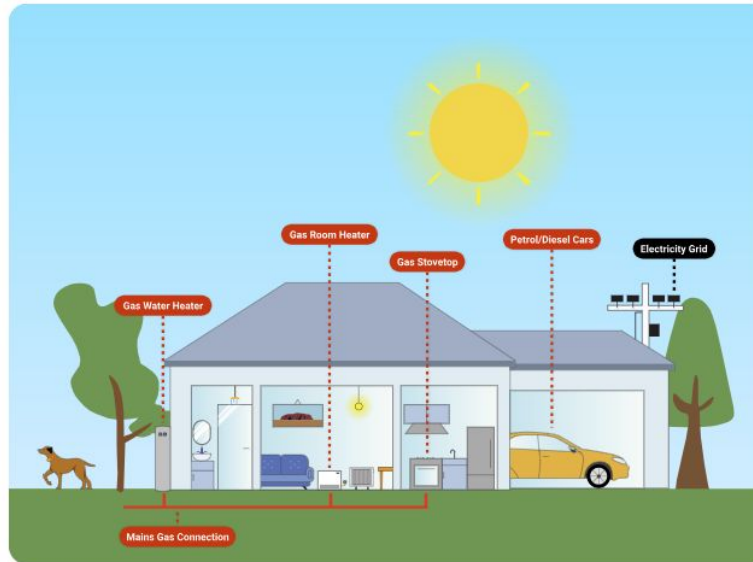
They were one of 10 local advocacy groups selected to help electrify their local communities.

The program has local goals identified by each group, such as increasing the amount of solar PV and hot water heat pumps in the

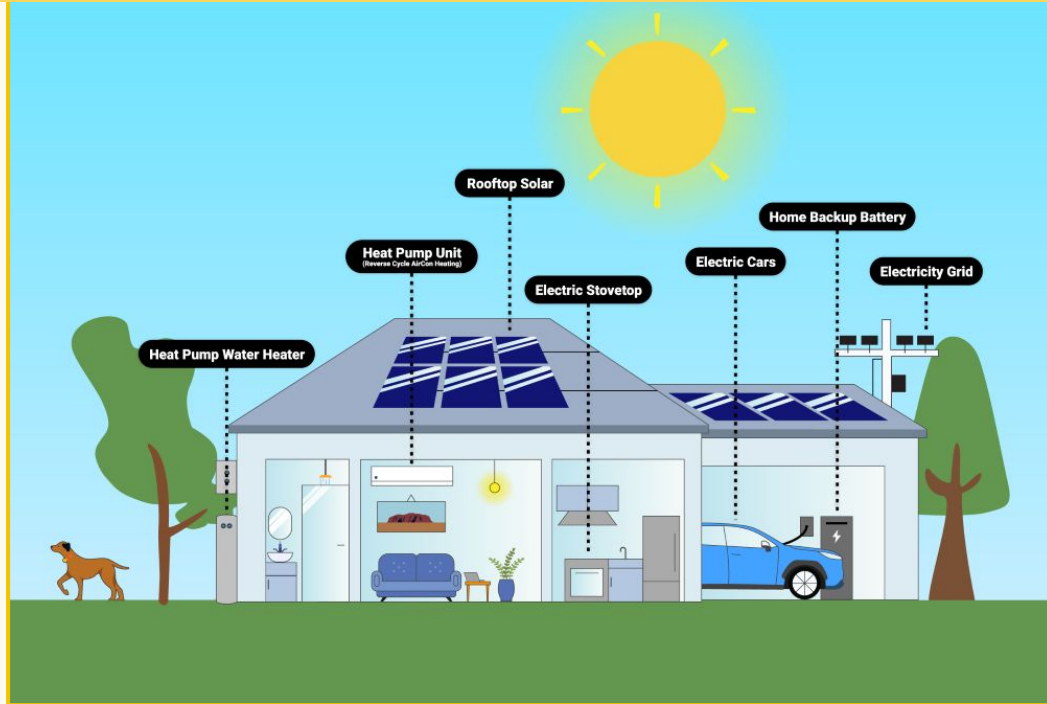
The largest portion of our domestic greenhouse gas emissions are our households followed by our businesses. They both use similar machines.



Almost all of these emissions come from energy, the machines in our daily lives. Petrol cars, gas heaters, gas water heaters, gas stoves, and the fossil fuel power plants supplying Australia's grid network electricity.



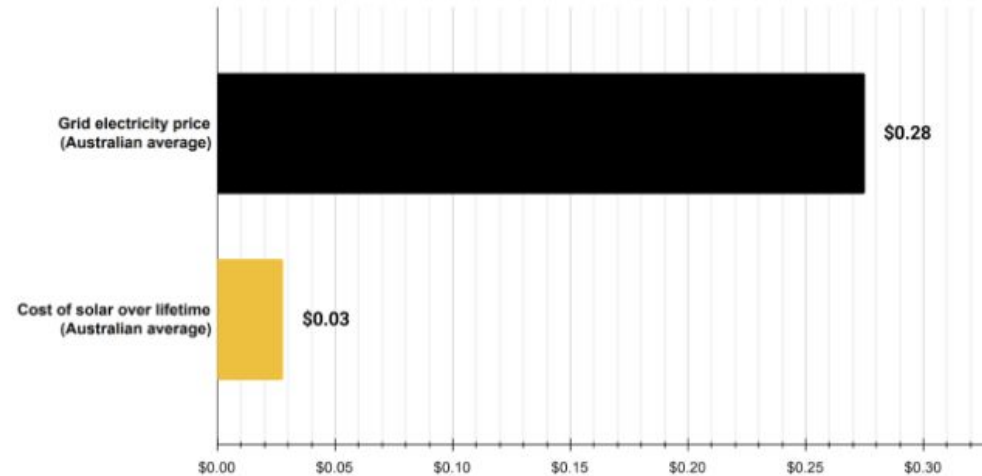
Healthier home, a fairer energy system and lower bills



Luckily in Australia we have access to the cheapest home energy in the world - our rooftop solar.

Cost of grid electricity vs solar electricity

Solar capacity factor of 17.14%, \$838 /kW 25 year lifetime, SolarChoice & AEMC.

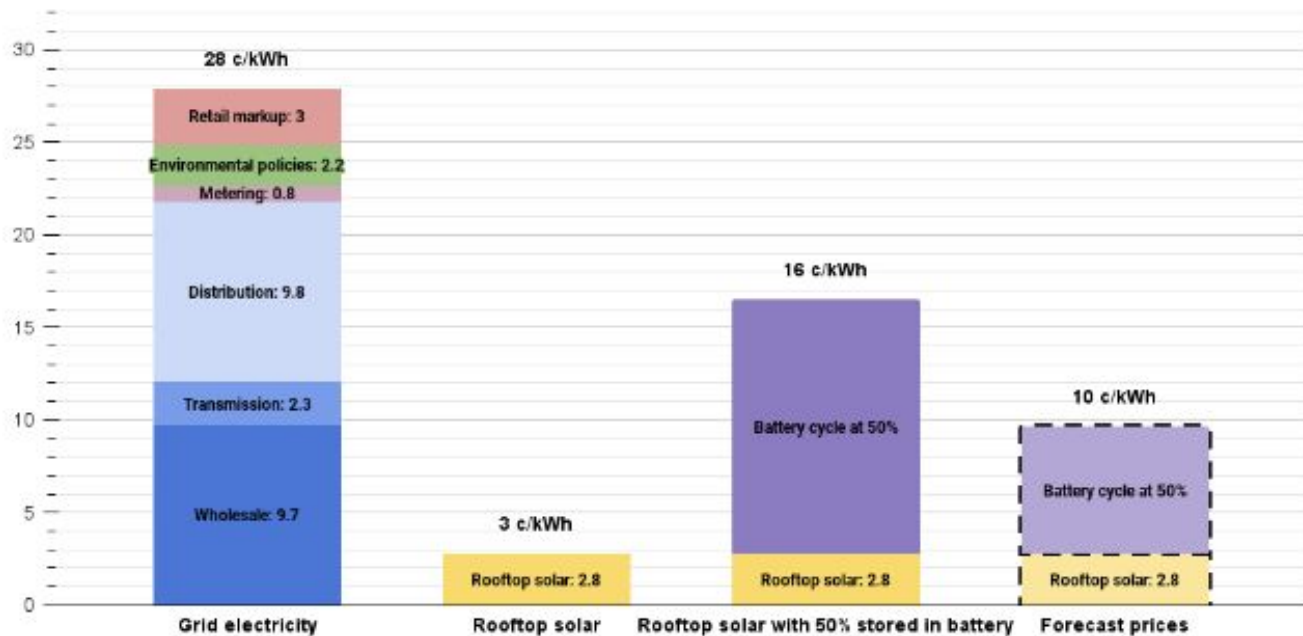


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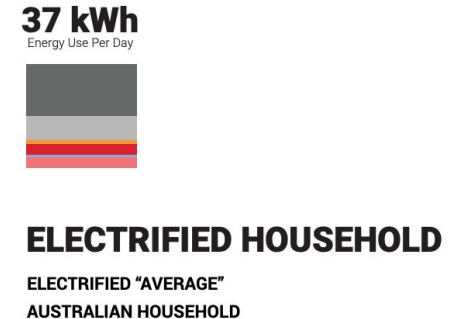
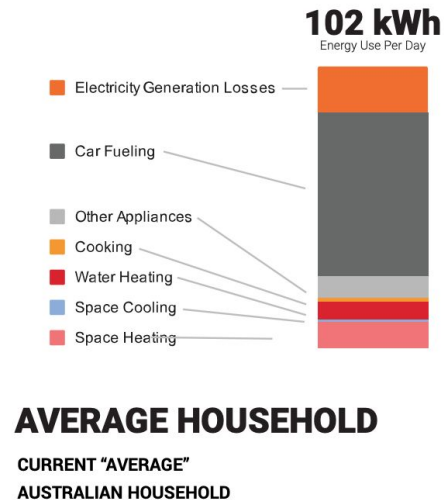
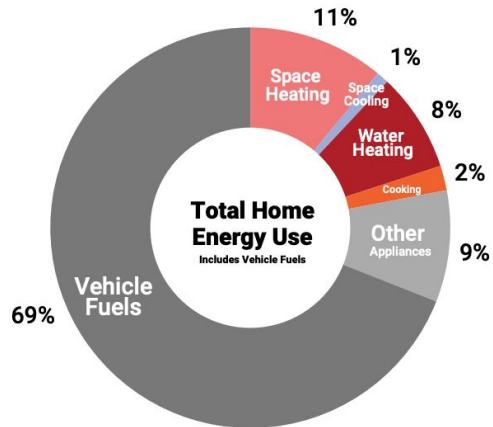


Long distance fossil fuel grid electricity versus solar and batteries

Source: AEMC Price Trends 2021, SolarChoice, SolarAnalytics, Capacity Factor: 17.1%.

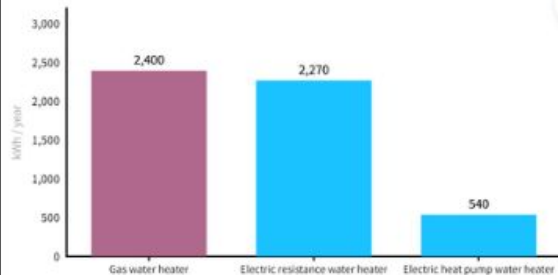


Electric machines are more efficient



ELECTRIC HOME

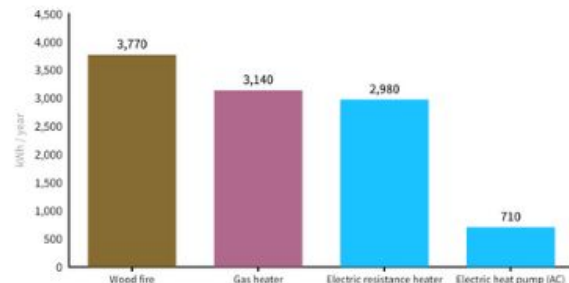
Water heaters | Average yearly energy use in kWh



Based on average Australian water heating energy needs of 3156 kWh per year. Solar capacity factor of 17.14%. Heat pump COP 1.8. Electric resistance COP 0.95. Gas COP 0.5.



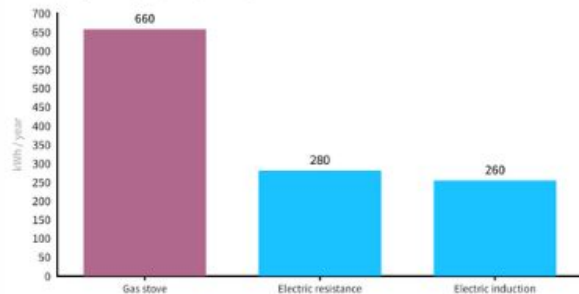
Space heaters | Average yearly energy use in kWh



Based on average Australian water heating energy needs of 3326 kWh per year. Solar capacity factor of 17.14%. Heat pump COP 1.8. Electric resistance COP 0.95. Gas COP 0.5. Wood COP 0.75.



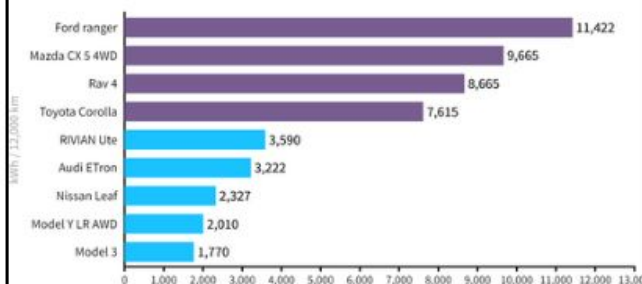
Stovetops | Average yearly energy use in kWh



Based on average Australian stovetop energy needs of 733 kWh per year. Gas stove COP 0.304. Induction stove COP 0.783. Resistance stove COP 0.711.



ehicles | Yearly energy use comparison in kWh

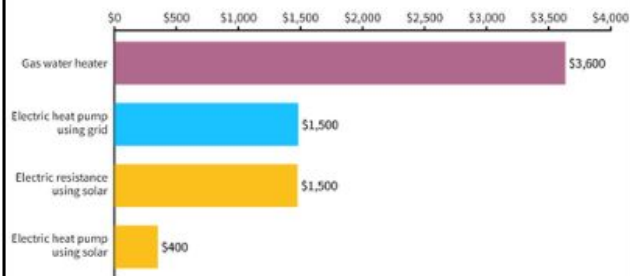


Based on average driving of 12,000 km per year. EPA MPG comparison of vehicles.



ELECTRIC HOME

Water heaters | Lifetime running costs



Based on average Australian water heating energy use of 2295 kWh per year. Solar capacity factor of 17.14%, \$838 /kW. Gas price \$0.15 /kWh. Grid price \$0.27 /kWh. Heat pump COP 4.0. Electric resistance COP 0.95. Gas COP 0.9. 10-year appliance lifetime.



Space heaters | Lifetime running costs



Based on average Australian heating energy use of 2828 kWh per year. Solar capacity factor of 17.14%, \$838 /kW. Gas price \$0.15 /kWh. Grid price \$0.27 /kWh. Heat pump COP 4.0. Gas COP 0.9. Solar use 10%. 10-year appliance lifetime.



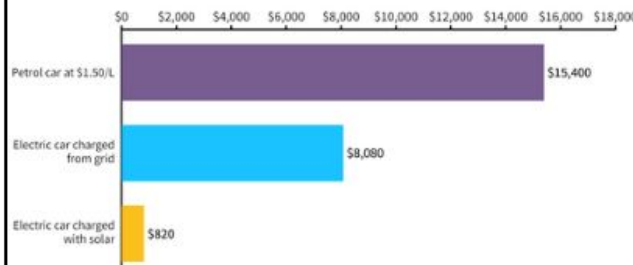
Stovetop cooking | Lifetime running costs



Based on average Australian stovetop cooking energy use of 200 kWh per year. Solar capacity factor of 17.14%, \$838 /kW. Gas price \$0.15 /kWh. Grid price \$0.27 /kWh. Induction COP 0.785. Resistance COP 0.711. Gas COP 0.904. Solar use 10%. 10-year appliance lifetime.



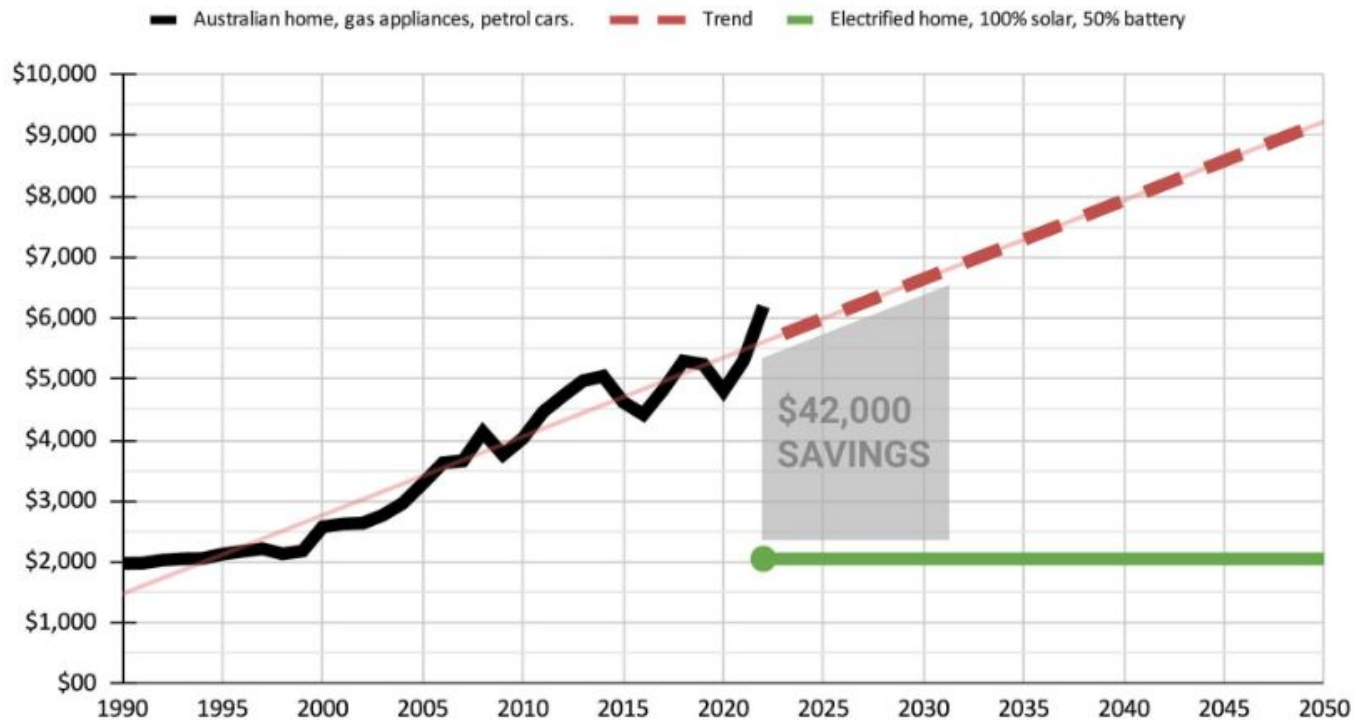
Driving | Lifetime running costs over 10 years



Based on average Australian driving of 12,000km per year. Petrol price \$1.50/L. Grid price \$0.27 /kWh. Solar price \$0.028 /kWh. Solar use 100%. 10-year lifetime.



Australian home running costs | Conventional versus electrified



REWIRING JAGAJAGA

A report on the benefits of home electrification for the Jagajaga electorate.

The planet is heating. Fires and floods are hitting our communities. Beautiful natural places such as the Great Barrier Reef are at risk. This is a plan that would decarbonise Jagajaga as urgently as the science demands and deliver huge savings for households.

Our research shows that Australia can lead the world by electrifying our homes and vehicles and powering them with renewable energy.



\$4,790

Average household savings per year on energy and vehicle costs by 2030.



\$292,000,000

Total household savings per year across your electorate by 2030.



1,800 jobs

Direct and indirect jobs created from community savings and installation work.



100%

Reduction in household energy emissions.

REWIRING MCEWEN

A report on the benefits of home electrification for the Mcewen electorate.

The planet is heating. Fires and floods are hitting our communities. Beautiful natural places such as the Great Barrier Reef are at risk. This is a plan that would decarbonise Mcewen as urgently as the science demands and deliver huge savings for households.

Our research shows that Australia can lead the world by electrifying our homes and vehicles and powering them with renewable energy.



\$5,570

Average household savings per year on energy and vehicle costs by 2030.



\$315,000,000

Total household savings per year across your electorate by 2030.



1,930 jobs

Direct and indirect jobs created from community savings and installation work.



100%

Reduction in household energy emissions.

How do we do this?

**Don't get the
guilts!**

**When you
change
appliances -
go electric.**

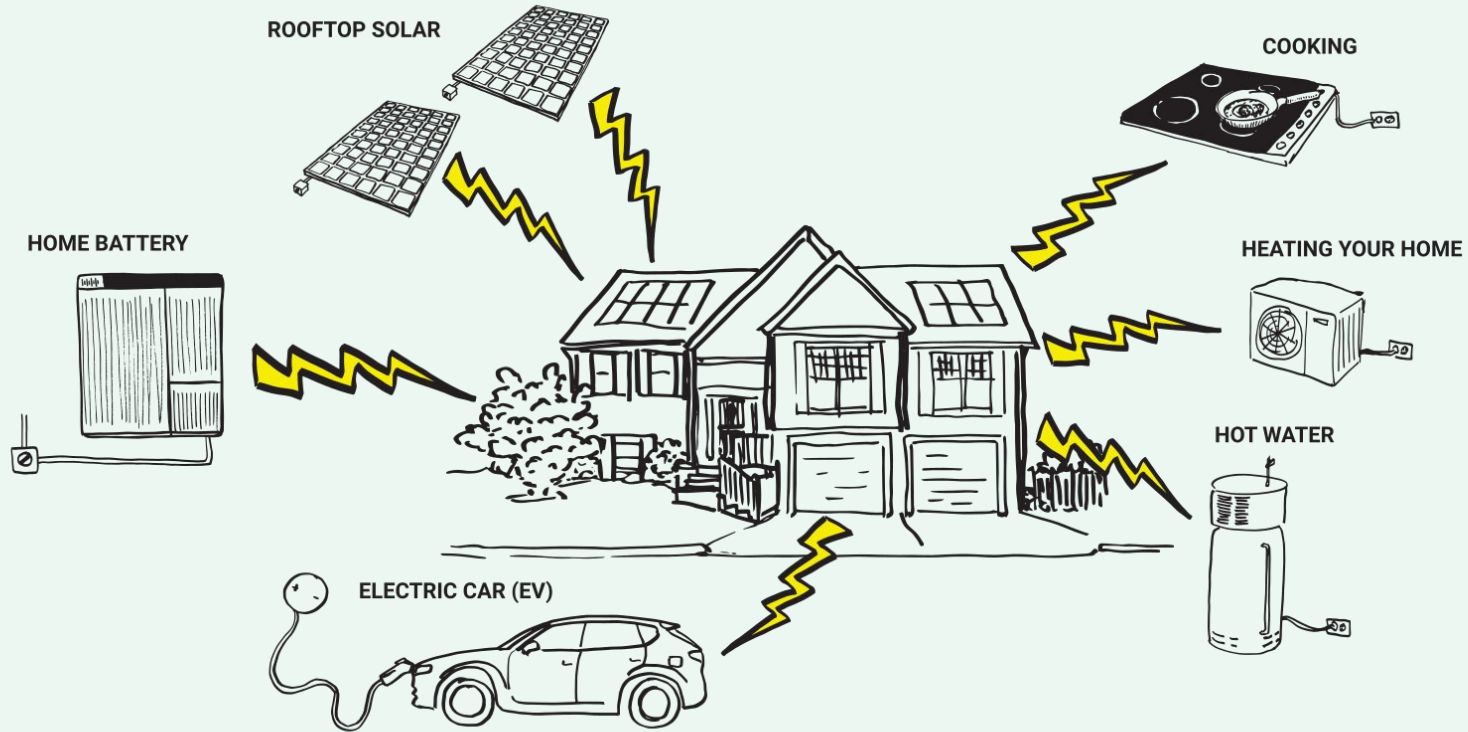
**Helping
households
with this
transition.**

Slashing bills and emissions for households

Flexible finance for electrification



SIX MACHINES IN HOMES



Electrifying households is an unmissable opportunity.

**\$3000 to
\$5000**
consumer
savings on
energy

**Emissions
reductions**
available with
speed and
social license

**A cheaper
energy system**
with more
generation
close to
demand

The Federal Government today (in late 2024) understands:
household electrification is crucial policy

82%

renewable
grid by 2030

43%

emissions
reductions
by 2030

~\$7000

average annual
household
energy + petrol
bills

53%

of voters
naming cost of
living as #1
priority

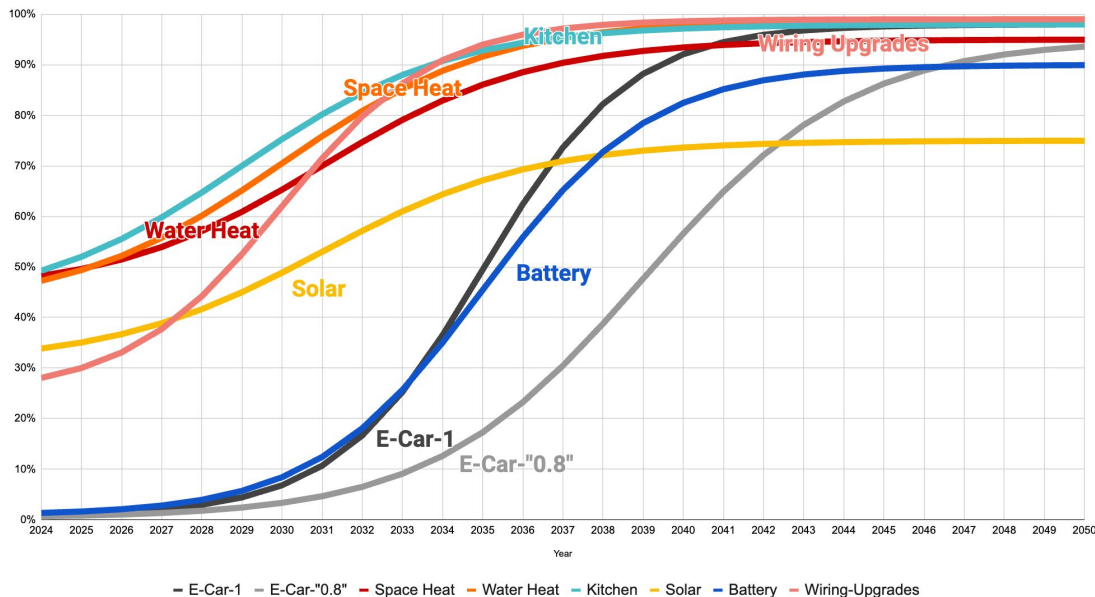
THE NEED FOR SPEED

This is what rapid electrification looks like out to

2050

Market transformation:
how can we make this chart a reality?

Penetration curves for household electrification



More homes electrify
to **lower bills** (or
comply with
standards).

Less homes remain to
pay for the fixed cost
of the **gas network**

**ELECTRIFICATION
FLYWHEEL**

**Electrification
is already
inevitable.**

Relative cost of
electric vs gas moves
further in favour of
electrification

Electric supply chains
grow, gas supply
chains **decline**

Who Rewiring Australia is talking to about this

PMO

Treasurer

Climate Change
Minister

Assistant Climate
Change Minister

DCCEEW

Department of
PM&C

Department of
Treasury

CEFC

DCCEEW CER
Taskforce

Department of
Finance

ACOSS and
housing
advocacy groups

Smart Energy
Council and
renewables industry

Greens, Teals and
crossbenchers

State energy
ministers

State agencies -
Solar Vic, NSW
DCCEEW...

New homes are still connecting to gas and new gas appliances are still on sale

Renters can't electrify their homes, and landlords have no incentive to



Can we make it
**faster and
fairer?**

Low-means homes can't afford upgrades or access conventional credit

Apartments have less solar benefits and big technical and co-ordination challenges

Significant reforms. Multiple levels of government.
Urgency combined with long-term vision.
But each step forward is no-regrets progress.

Finance

and funding to
reduce upfront
costs for
households

Standards

for rented
homes and
new builds

Reform

of the energy
market for
consumers

Education

and
enablement
for everyone

Significant reforms. Multiple levels of government.
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Finance

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Reform

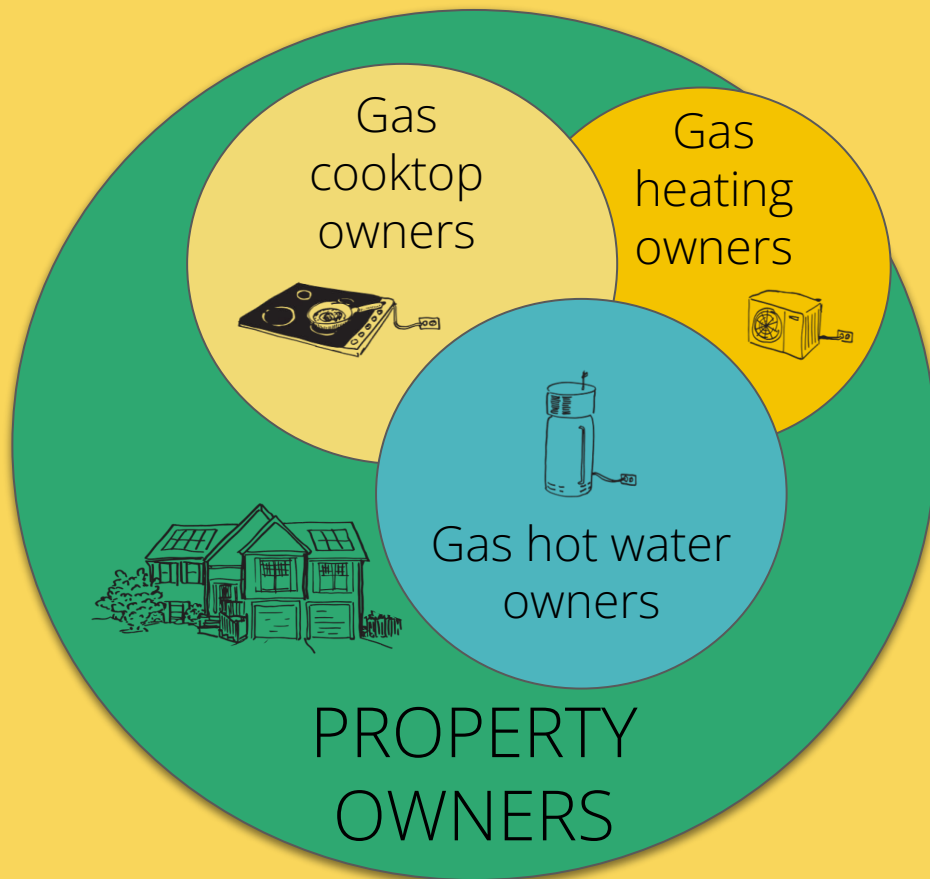
of the energy
market for
consumers

Education

and
enablement
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Who makes the financial decision to electrify?

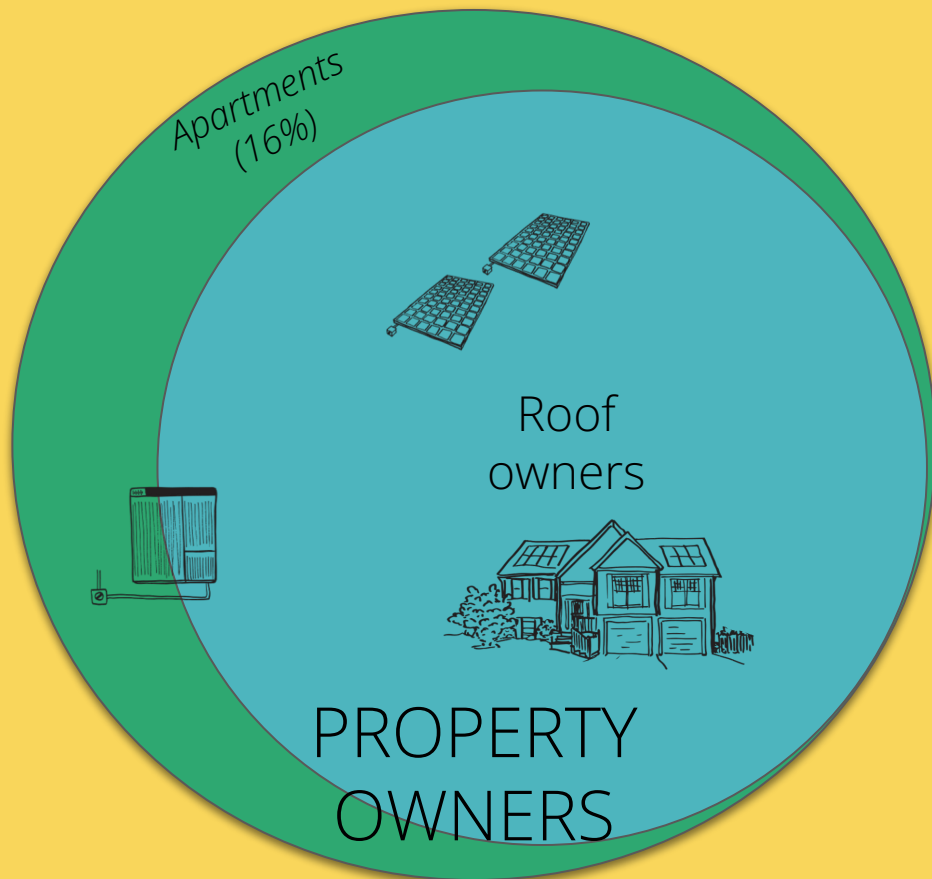
~100%
of gas hot water
systems belong to
property owners



Who makes the purchasing decisions to electrify?

~100%

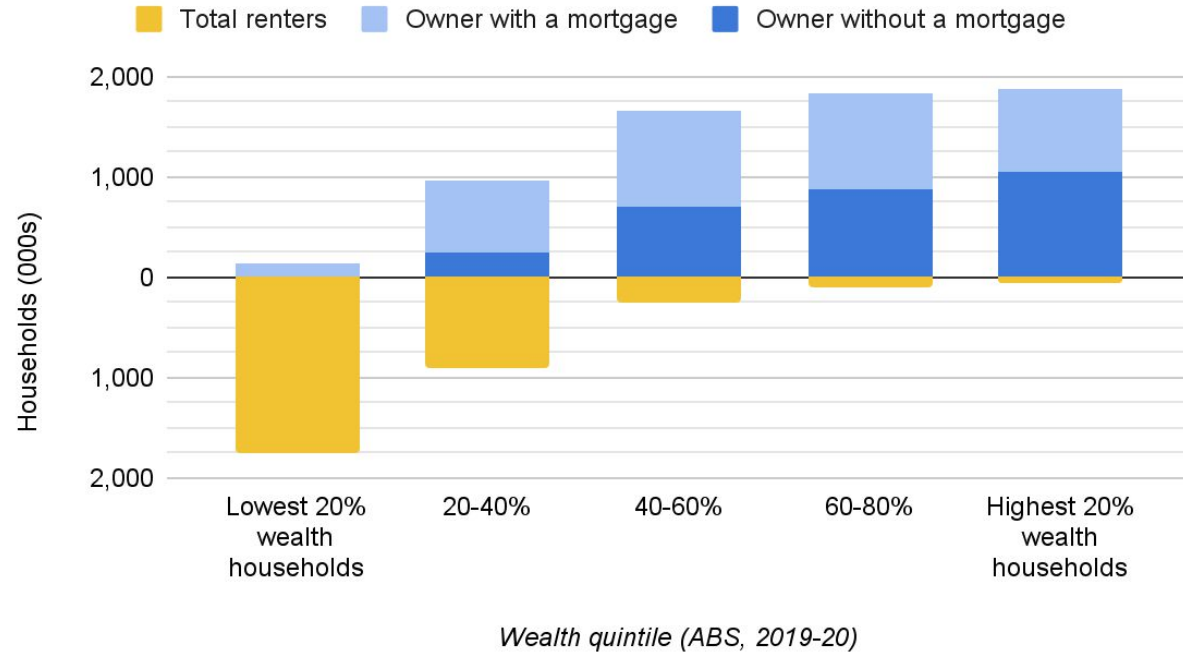
of roofs and
garages for solar
and battery belong
to property owners



PROPERTY OWNERS

Property owners in Australia are generally higher wealth households.

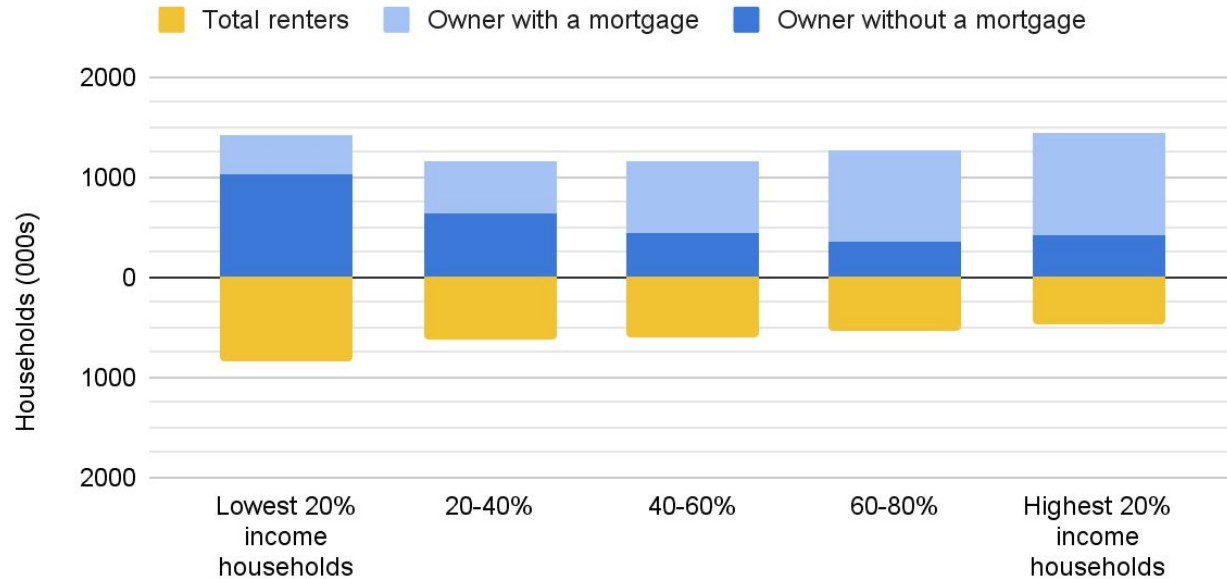
Home ownership by wealth



PROPERTY OWNERS

But income among property owners is varied.

Home ownership by income

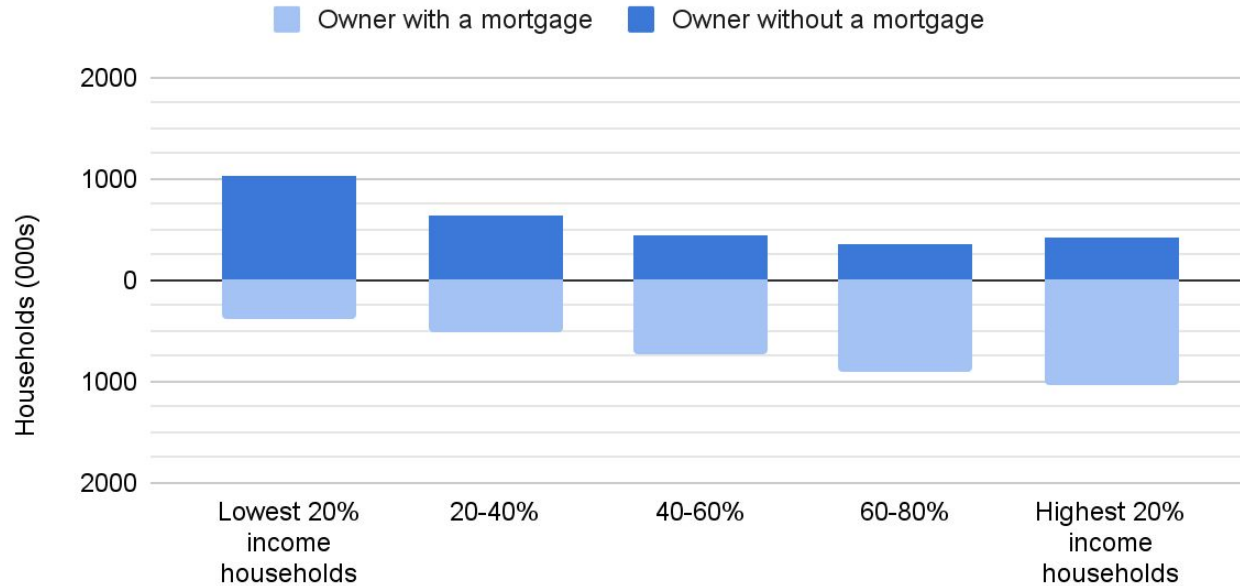


Equivalised Disposable Income Quintile (ABS, 2019-20)

PROPERTY OWNERS

And mortgages are **more common** in higher-income households.

Outright vs mortgage owners by income



Equivalised Disposable Income Quintile (ABS, 2019-20)



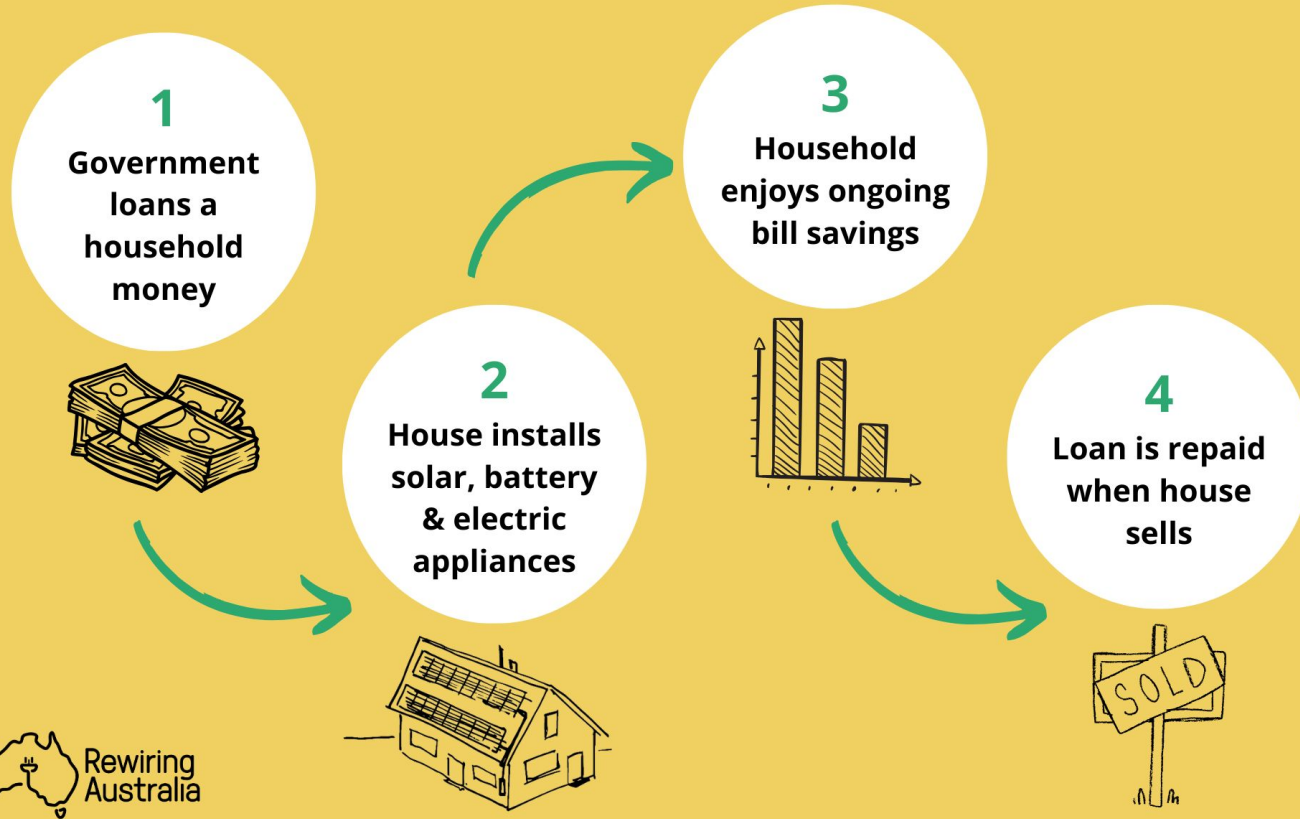
Australia has solved this type of 'loans for low incomes' problem before: HECS

HECS allows **borrowers to repay when they are best able to - when they start earning enough income**, regardless of income levels at the time when they need the loan.

HECS was designed for students, who are young, low wealth, and expect higher incomes in the future.

But electrification finance is for older, higher wealth households with lower future incomes. A different design is required.

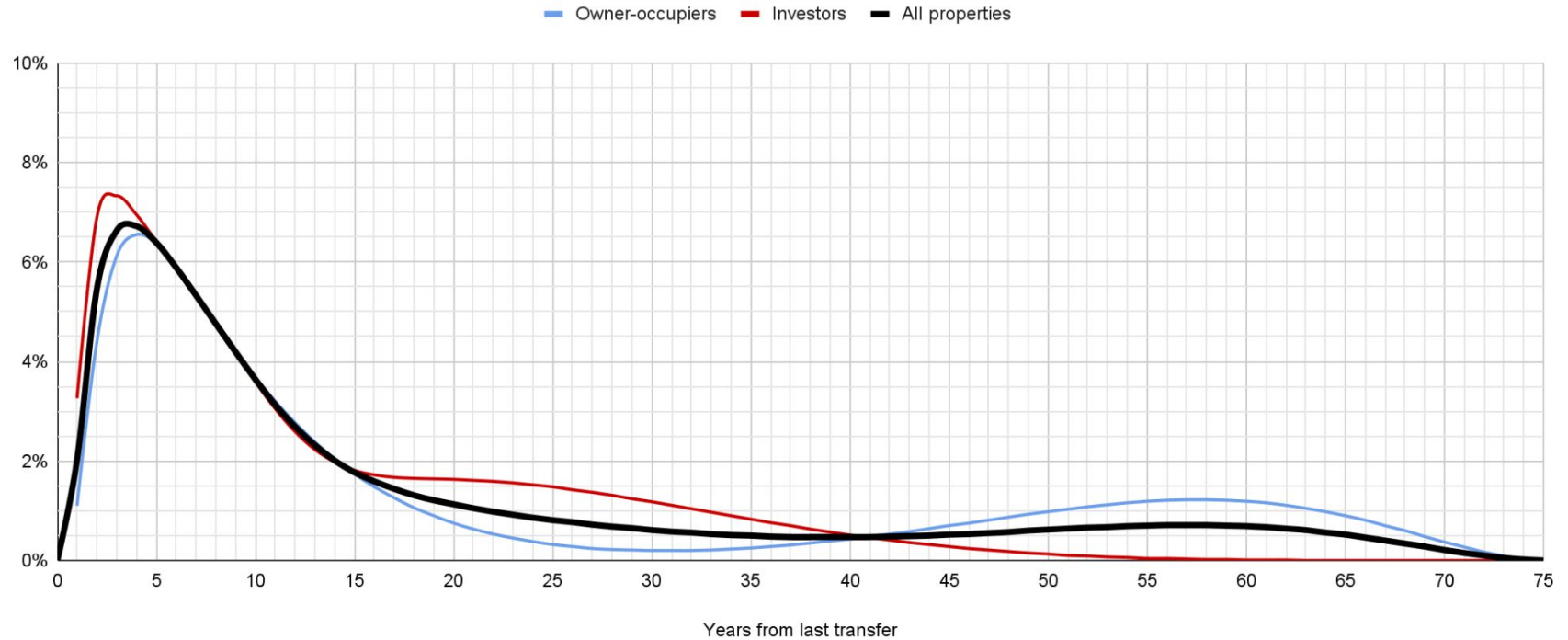
ELECTRIFY EVERYTHING LOAN SCHEME



HOW LONG DO PEOPLE OWN PROPERTY FOR?

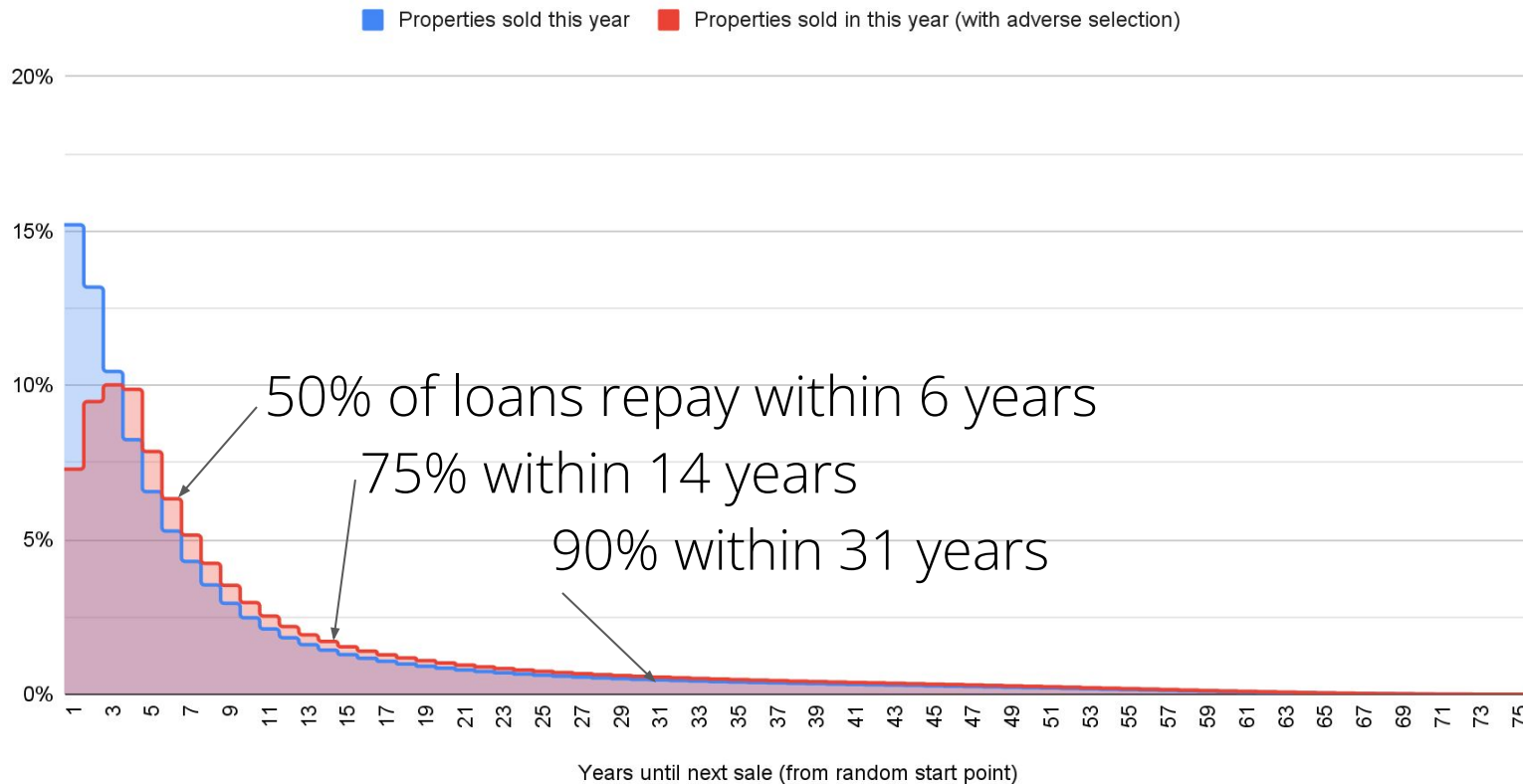
Holding period of NSW properties after sale

NSW Treasury analysis, 2022



WHEN WOULD A PROPERTY LOAN REPAY?

Course of sales of all properties from 'now' (not from last sale)





What if we could make
access to electrification
finance as simple as
**ticking a box on a
plumber's invoice?**

We think a property-secured finance approach that defers repayments to sale has a lot going for it.

Property security minimises bad debts. Avoids the main taxpayer cost of HECS loans.

Accessible across incomes and ages. Does not require ability to repay from income.

Less middle class welfare and moral hazard. Owners still bear the underlying cost of upgrades.

Applicable to every private dwelling. (But landlords will need further incentives.)

WHAT ABOUT RENTERS?

Disclosure on property listings. We can act quickly to help renters compare energy costs.

Disclosure reform is an immediate enabling step to make energy costs **transparent** and **salient**.



\$675



Energy bill estimate: \$4 / week ⓘ

1 Smith St, SUNNYTOWN NSW 2000

🛏 2 🚿 1 🚗 - • House



\$930



Energy bill estimate: \$52 / week ⓘ

3 Smith St, DRAUGHTSVILLE NSW 2001

🛏 3 🚿 2 🚗 1 • House



\$950 pw



Energy bill estimate: \$17 / week ⓘ

3/5 Smith St, WARMVALE NSW 2002

🛏 3 🚿 3 🚗 2 🏠 780m²

WHAT ABOUT RENTERS?

Minimum rental standards are a key policy for widespread action.

We can require landlords to electrify when they replace appliances.

Victoria has already announced plans to do it. And the ACT is about to as well.





Electrify
Everything
FOR EVERYONE

Closing the imagination gap
for Australian households
and decision-makers.

Key take away messages

**When you
change
appliances -
go electric.**

**Talk to
friends and
policy
makers
about EELS.**

**Continue to
support local
groups...**

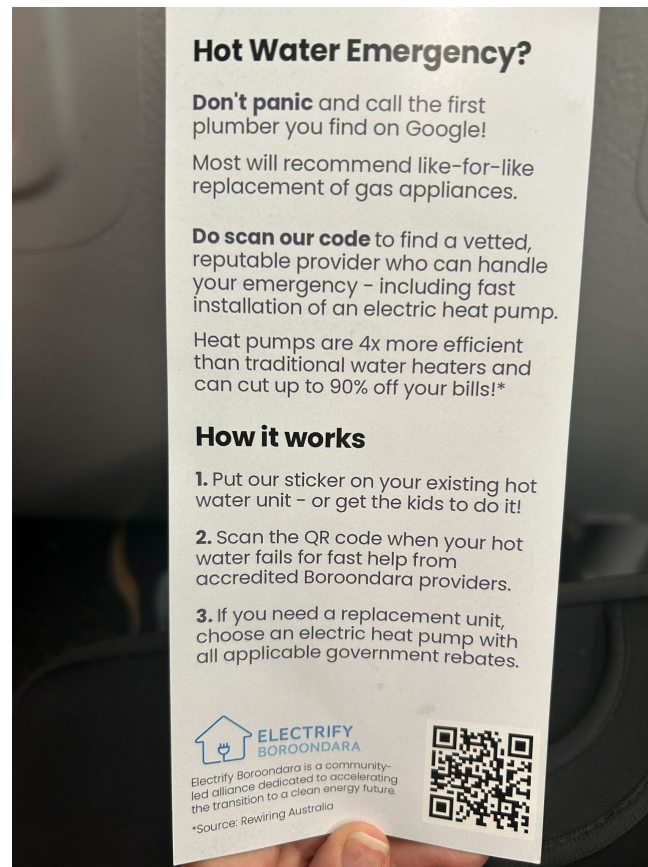
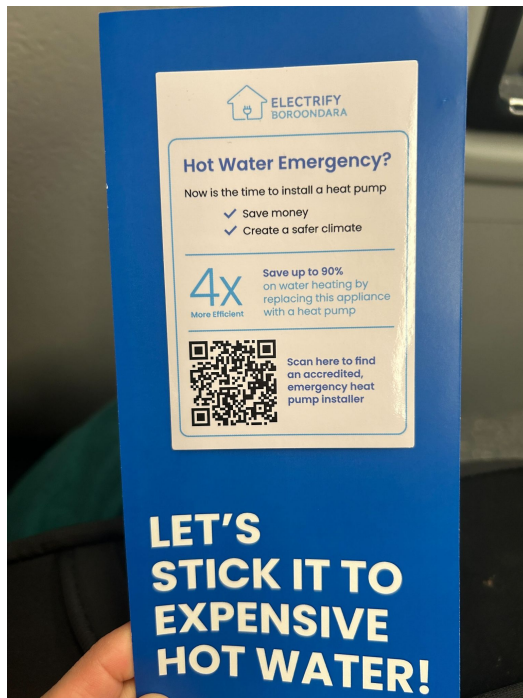


Clean Energy
Nillumbik

- How can we help Nillumbik homes and businesses to Electrify Everything?
- Home planner, events
- Referral service? Stickers? Other ideas?
- Survey!



Clean Energy Nillumbik





*Clean Energy
Nillumbik*

Please take 2
minutes to
complete our
“Have your say”
survey.

